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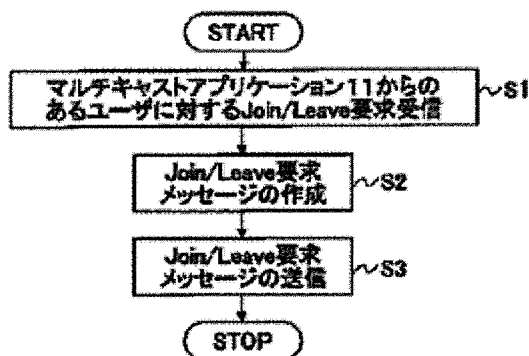
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Abstract:

PROBLEM TO BE SOLVED: To provide a multicast information distribution control method and system that can provide an opportunity of join processing or leave processing by a client from other communication units than the client. **SOLUTION:** The task above can be attained by the multicast information distribution control method and system that allows the communication units other than the client to transmit request information to the client according to a communication protocol other than the communication protocol relating to multicast distribution of the information and available by a prescribed communication network and the client conducts the prescribed processing on the basis of the request information received by the client so that the client can receive the information multicast-distributed from a server or terminate the reception.

Join/Leave要求メッセージの送信手順の一例を示すフローチャート

**JPO Machine translation abstract:**(57) **Abstract****SUBJECT** SUBJECT of this invention is providing the multicast information distribution control

method and system which can give the opportunity of the Join processing by a client, or Leave processing from communication apparatus other than the client.

Means for Solution From communication apparatus other than the above-mentioned client, an aforementioned problem is except a communication procedure concerning multicast distribution of the above-mentioned information, and transmits demand information to the above-mentioned client according to a communication procedure possible in the above-mentioned predetermined communication network, The above-mentioned predetermined processing is performed based on the above-mentioned demand information received in the above-mentioned client, and the above-mentioned client is attained by a multicast information distribution control method and a system which enabled it to perform reception of information by which multicast distribution is carried out from the above-mentioned server, or closing of the reception.

Claim(s)

Claim 1 In a multicast information distribution control method for a client which performs predetermined processing and performs reception of information by which multicast distribution is carried out via a predetermined communication network from a server, or closing of the reception, From communication apparatus other than the above-mentioned client, are except a communication procedure concerning multicast distribution of the above-mentioned information, and demand information is transmitted to the above-mentioned client according to a communication procedure possible in the above-mentioned predetermined communication network, A multicast information distribution control method that perform the above-mentioned predetermined processing in the above-mentioned client based on the received above-mentioned demand information, and the above-mentioned client enabled it to perform reception of information by which multicast distribution is carried out from the above-mentioned server, or closing of the reception.

Claim 2 A multicast information distribution control method which transmits the above-mentioned demand information to the above-mentioned client in a multicast information distribution control method according to claim 1 from a server which becomes distribution origin of information.

Claim 3 In a multicast distribution control method according to claim 1 or 2, the above-mentioned predetermined communication network, It is a network concerning a mobile communication system, A multicast information distribution control method which transmits the above-mentioned demand information to a moving machine used as the above-mentioned client according to a communication procedure of a short message service (SMS:Short Message Service) which the mobile communication system provides from the above-mentioned communication apparatus.

Claim 4 either of claims 1 thru/or 3 -- a multicast information distribution control method which starts the above-mentioned predetermined processing based on the demand information when predetermined operation is made in a multicast distribution control method of a statement in a client which received the above-mentioned demand information.

Claim 5 In a multicast information distribution control system for a client which performs predetermined processing and performs reception of information by which multicast distribution is carried out via a predetermined communication network from a server, or closing of the reception, Have a communication apparatus which is except a communication procedure concerning multicast distribution of the above-mentioned information, and transmits demand information to the above-mentioned client according to a communication procedure possible in the above-mentioned predetermined communication network, and. The above-mentioned client has a processing controlling means to which the above-mentioned predetermined processing is made to carry out based on the above-mentioned demand information received in the client concerned, and by processing predetermined **this** . A multicast information distribution control system with which this client enabled it to perform reception of information by which multicast distribution is carried out from the above-mentioned server, or closing of the reception.

Claim 6 A multicast information distribution control system used as a server which a communication apparatus which transmits the above-mentioned demand information to the above-mentioned client becomes distribution origin of information in the multicast information distribution control system according to claim 5.

Claim 7 In the multicast distribution control system according to claim 5 or 6, the above-mentioned predetermined communication network, Are a network concerning a mobile communication system and the above-mentioned communication apparatus, A multicast distribution control system which transmitted the above-mentioned demand information to a moving machine used as the above-mentioned client according to a communication procedure of a short message service (SMS:Short MessageService) which the mobile communication system provides.

Claim 8 A multicast distribution control system it was made to make the above-mentioned predetermined processing start based on the demand information in claim 5 thru/or a multicast distribution control system of 7 gaps or a statement when predetermined operation was made in a client in which the above-mentioned processing controlling means received the above-mentioned demand information.

Claim 9 In the server concerned in a multicast information distribution control system for a client which performs predetermined processing and performs reception of information by which multicast distribution is carried out via a predetermined communication network from a server, or closing of the reception, A demand information creating means which generates demand information including information required to enable processing predetermined **in a client / above-mentioned** , It has a demand transmitting information control means which is except a communication procedure which starts multicast distribution of the above-mentioned information in the above-mentioned demand information generated in this demand information creating means, and transmits demand information to the above-mentioned client according to a communication procedure possible in the above-mentioned predetermined communication network, A server which a client which received the above-mentioned demand information performs the above-mentioned predetermined processing based on this demand information, and enabled it to perform reception of information by which multicast distribution is carried out, or closing of the reception.

Claim 10 In the server according to claim 9, the above-mentioned predetermined communication network, Are a network concerning a mobile communication system and a demand transmitting information control means, A server which transmitted the above-mentioned demand information to a moving machine used as the above-mentioned client according to a communication procedure of a short message service (SMS:Short Message Service) which the above-mentioned mobile communication system provides.

Claim 11 In a client which performs predetermined processing and reception of information by which multicast distribution is carried out via a predetermined communication network, or whose end of the reception is attained from a server, A demand information acquisition means which acquires demand information which is except a communication procedure concerning multicast distribution of the above-mentioned information, and is transmitted according to a communication procedure possible in the above-mentioned predetermined communication network from communication apparatus other than this client, A client which enabled it to perform reception of information has a processing controlling means to which the above-mentioned predetermined processing is made to carry out based on the above-mentioned demand information acquired in this demand information acquisition means, and multicast distribution is carried out from the above-mentioned server by processing predetermined **this** of, or closing of the reception.

Claim 12 In the client according to claim 11, the above-mentioned predetermined communication network, Are a network concerning a mobile communication system and the above-mentioned demand information acquisition means, A client which acquired the above-mentioned demand information transmitted according to a communication procedure of a short message service (SMS:Short Message Service) which the mobile communication system provides from the above-mentioned communication apparatus.

Claim 13 A client it was made for the above-mentioned processing controlling means to make start the above-mentioned predetermined processing based on the demand information in the client according to claim 11 or 12 when predetermined operation was made in this client after the above-mentioned demand information was acquired in the above-mentioned demand information acquisition means.

Detailed Description of the Invention

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Field of the Invention This invention relates to the multicast information distribution control method and a system, and it relates to the multicast information distribution control method and system for terminating reception by the client of the information in order to enable in detail reception by the client of the information by which multicast distribution is carried out.

0002 This invention relates to the client used as the distribution destination of the server which becomes the distribution origin of the information which processes in accordance with such a multicast information distribution control method, and its information.

0003

Description of the Prior Art Conventionally, in a multicasting type information distribution system, processing for enabling reception by the client of the information by which multicast distribution is carried out, and processing for ending reception of the information are made like next, and are made.

0004 The client which wishes to receive distribute information, It changes into the state where the information on addressing to a multicasting IP address corresponding to a multicast group (packet) is receivable (the receiving operation of the data addressed to a multicasting IP address is started, and the port of the port number corresponding to a multicasting IP address is made into an open condition). And the client, According to IGMP (Internet Group Management Protocol), the multicasting IP address is notified to the router in the IP network to which it was connected. It declares receiving the information on the addressing to a multicasting IP address (packet) (Join). By declaration (Join) of receiving the information on this addressing to a multicasting IP address, the information on that addressing to a multicasting IP address to which each router in an IP network is transmitted can reach a client now.

0005 When terminating reception by the client of the information on the addressing to a multicasting IP address, on the other hand, a client, The state where the information on the addressing to a multicasting IP address is receivable is canceled (the receiving operation of the data addressed to a multicasting IP address is ended, and the port of the port number corresponding to a multicasting IP address is made into close status). And the client declares ending reception of the information on the addressing to a multicasting IP address according to IGMP to the router in the IP network to which it is connected (Leave). The information on that addressing to a multicasting IP address to which each router in an IP network is transmitted stops reaching a client by declaration (Leave) of ending reception of the information on this addressing to a multicasting IP address.

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Problem(s) to be Solved by the Invention The processing for enabling reception by the client of the information by which multicast distribution is carried out in the above multicasting type information distribution systems, Or the opportunity of the processing for terminating reception by the client of the information is given within the client concerned which becomes the side which always receives the multicast distribution of information. However, it may not be appropriate to give the opportunity of processing for the end of reception of the information by a client, including urgent information, propagandistic information, information useful within a certain group, etc., or its reception within the client depending on the kind of information which should be carried out multicast distribution.

0007 For example, disaster information is information which should be immediately distributed to the client irrespective of whether a client is in the state which can receive information. In this case, as for the opportunity of the processing for enabling reception by the client of that disaster information, being given from the distribution origin of that information is preferred.

0008 Advertisement information about the service (what is called a limited special offer) to which the period (time) was restricted, It enables it to receive a client within the period, and it is useful also for an advertiser and the user of a client to terminate reception by the client of the information, if the period expires. In this case, as for the opportunity of the processing for terminating the processing and its reception for enabling reception by the client of that information, giving in the distribution origin of that information is preferred.

0009 When a one user notices about useful information within the group to whom two or more users belong, it is convenient for each user in a group that other users' communication terminal (client) also enables it to receive the information. In this case, as for the opportunity of the processing for enabling reception with the communication terminal (client) of a user with that

information, giving from other users' communication terminal is preferred.

0010Then, the first SUBJECT of this invention, It is providing the multicast information distribution control method and system which can give the opportunity of the processing for terminating the processing or its reception for enabling reception by the client of the information by which multicast distribution is carried out from communication apparatus other than the client.

0011The second SUBJECT of this invention is providing the server which becomes the distribution origin of the information which performs processing according to such a multicast information distribution control method.

0012The third SUBJECT of this invention is providing the client used as the distribution destination of the information which performs processing according to such a multicast information distribution control method.

0013

Means for Solving the ProblemIn order to solve the first SUBJECT of the above, this invention so that it may be indicated to claim 1, In a distribute information control method for a client which performs predetermined processing and performs reception of information by which multicast distribution is carried out via a predetermined communication network from a server, or closing of the reception, From communication apparatus other than the above-mentioned client, are except a communication procedure concerning multicast distribution of the above-mentioned information, and demand information is transmitted to the above-mentioned client according to a communication procedure possible in the above-mentioned predetermined communication network, It is constituted so that the above-mentioned predetermined processing may be performed based on the above-mentioned demand information received in the above-mentioned client and the above-mentioned client can perform reception of information by which multicast distribution is carried out from the above-mentioned server, or closing of the reception.

0014In such a multicast information distribution control method, reception of information by which multicast distribution is carried out from the above-mentioned predetermined processing deed and a server based on demand information transmitted from communication apparatus other than a client, or an end of the reception of a client is attained.

0015The above-mentioned predetermined communication network will not be limited in particular, if information transfer according to multicast distribution of information and communication procedures other than a communication procedure concerning the multicast distribution is possible.

0016The above-mentioned predetermined processing is processing for enabling reception of information by which multicast distribution is carried out, or an end of the reception, In for example, the case of multicast distribution of information according to a communication procedure of IP. Processings, such as declaration (Join) of notifying a multicasting IP address to an IP router, and distributing information on the addressing to a multicasting IP address and declaration (Leave) of ending reception of information on the addressing to a multicasting IP address, are included.

0017From a viewpoint that an opportunity of the above-mentioned predetermined processing in a client can be given from a server which becomes distribution origin of information by which multicast distribution is carried out, this invention, In an above-mentioned distribute information control method, it can constitute so that the above-mentioned requirement signal may be transmitted to the above-mentioned client from a server which becomes distribution origin of information, so that it may be indicated to claim 2.

0018A viewpoint of applying when performing multicast distribution of information to a moving machine used as a client to this invention, In each above-mentioned multicast distribution control method, the above-mentioned predetermined communication network, It is a network concerning a mobile communication system, It can constitute so that the above-mentioned demand information may be transmitted to a moving machine used as the above-mentioned client according to a communication procedure of a short message service (SMS:Short Message Service) which the mobile communication system provides from the above-mentioned communication apparatus.

0019From a viewpoint that it can opt for reception of information by which multicast distribution is carried out, or an end of the reception with an intention of a user of a client, this invention, When predetermined operation is made in a multicast distribution control method of ***** in a client which received the above-mentioned demand information so that it may be indicated to claim 4, it can constitute so that the above-mentioned predetermined processing based on the demand

information may be started.

0020In such a multicast distribution control method, if a user of a client performs the above-mentioned predetermined operation, the above-mentioned predetermined processing based on the demand information will be started. That is, the predetermined operation can determine reception by a client of information by which multicast distribution is carried out, or an end of the reception.

0021In order to solve the first SUBJECT of the above, this invention so that it may be indicated to claim 5, In a multicast information distribution control system for a client which performs predetermined processing and performs reception of information by which multicast distribution is carried out via a predetermined communication network from a server, or closing of the reception, Have a communication apparatus which is except a communication procedure concerning multicast distribution of the above-mentioned information, and transmits demand information to the above-mentioned client according to a communication procedure possible in the above-mentioned predetermined communication network, and. The above-mentioned client has a processing controlling means to which the above-mentioned predetermined processing is made to carry out based on the above-mentioned demand information received in the client concerned, and it is constituted so that this client can perform reception of information by which multicast distribution is carried out from the above-mentioned server, or closing of the reception by processing predetermined **this** .

0022In order to solve the second SUBJECT of the above, this invention, In the server concerned in a multicast information distribution control system for a client which performs predetermined processing and performs reception of information by which multicast distribution is carried out via a predetermined communication network from a server, or closing of the reception so that it may be indicated to claim 9, A demand information creating means which generates demand information including information required to enable processing predetermined **in a client / above-mentioned** , It has a demand transmitting information control means which is except a communication procedure which starts multicast distribution of the above-mentioned information in the above-mentioned demand information generated in this demand information creating means, and transmits demand information to the above-mentioned client according to a communication procedure possible in the above-mentioned predetermined communication network, It is constituted so that a client which received the above-mentioned demand information may perform the above-mentioned predetermined processing based on this demand information and reception of information by which multicast distribution is carried out, or closing of the reception can be performed.

0023In order to solve the third SUBJECT of the above, this invention, In a client reception of information by which performs predetermined processing and multicast distribution is carried out via a predetermined communication network from a server, or whose end of the reception is attained so that it may be indicated to claim 11, A demand information acquisition means which acquires demand information which is except a communication procedure concerning multicast distribution of the above-mentioned information, and is transmitted according to a communication procedure possible in the above-mentioned predetermined communication network from communication apparatus other than this client, It has a processing controlling means to which the above-mentioned predetermined processing is made to carry out based on the above-mentioned demand information acquired in this demand information acquisition means, and it is constituted so that reception of information multicast distribution is carried out from the above-mentioned server by processing predetermined **this** of, or closing of the reception can be performed.

0024

Embodiment of the InventionHereafter, an embodiment of the invention is described using a drawing.

0025The system by which the multicast information distribution control method and system concerning one gestalt of operation of this invention are applied is constituted, for example, as shown in drawing 1. In this example, the multicast distribution of information is made in a mobile communication system to the moving machines (PC terminal connected to a portable telephone, a Personal Digital Assistant (PDA), a portable telephone, etc.) which serve as a client from the server which becomes the distribution origin of information.

0026In drawing 1, the mobile communication system 100 has the transfer network 50 and two or

more base transceiver station $20_1, 20_2, 20_3, \dots, 20_n$. And the server 10 which becomes the distribution origin of information is connected to the transfer network 50. The transfer network 50 has two or more IP routers mutually connected with the channel. The IP router which has a radio control facility is contained in two or more of the IP routers, and either the above-mentioned base transceiver station $20_1 - 20_n$ are connected to each IP router which has the radio control facility. Each IP router in the transfer network 50 is transmitted to the information on addressing to moving machine 30 sent out from the server 10 (packet) one by one according to predetermined routing procedures (a multicasting routing procedure, a unicast routing procedure, etc.). And the information which reached the IP router which has a radio control facility is transmitted to the moving machine 30 from base transceiver station 20_i (i is 1, --, or n) connected to the IP router.

0027The above-mentioned server 10 has the multicast application 11, the multicast management department 12, the communication control unit 12, and the memory storage 14. The multicast application 11 processes in order to perform multicast distribution of the information stored in the memory storage 14 to the moving machine 30 used as a client. According to the demand from the multicast application 11, the multicast management department 12, The control for enabling reception with the moving machine 30 of the information by which multicast distribution is carried out (Join), Or creation of the Join/Leave request message for giving the opportunity of the control (Leave) for terminating the reception and the transmission control to the moving machine 30 of the message are performed. This transmission control is made according to the communication procedure which can be provided with mobile communication systems 100 other than the communication procedure of IP used when performing multicast distribution of information (packet). For example, SMS (Short Message Service), The transmission control can be performed according to the communications protocol for control with which the mobile communication system 100 concerned which can be included in the control information needed when the moving machine 30 establishes a bearer (communication path) in the mobile communication system 100, and can be provided was equipped. In the state where the bearer (communication path) is already established, the transmission control of the Join/Leave request message can also be performed to the moving machine 30 according to a unicast routing procedure.

0028The communication control unit 13 performs communications control within the mobile communication system 100 of the server 10. Specifically, control for sending out the information addressed to a multicasting IP address (packet) to the transfer network 50 based on the directions from the multicast application 11 is performed. According to the transmission control by the multicast management department 12 mentioned above, the communication control unit 13 addresses a Join/Leave request message to the moving machine 30, and transmits. This communication control unit 13 communicates with the contents server in the Internet, or an advertisement information server via Gateway 150, and acquires the information which should be distributed. And the information which should be distributed is stored in the memory storage 14 by the multicast application 11.

0029In the mobile communication system 100 of the above composition, the moving machine 30 used as a client, In order to receive the information by which multicast distribution is carried out from the server 10, it is necessary to perform processing (henceforth Join processing) for enabling the reception of information by which multicast distribution is carried out like the conventional system. The moving machine 30 needs to perform processing (henceforth Leave processing) for terminating reception of the information like the conventional system, in order to end the reception of information which has received such.

0030The server 10 which performs multicast distribution of information, When distributing the information to the moving machine 30 used as a certain client, in order to give the opportunity of the above-mentioned Join processing with the moving machine 30, Or when the distribution of the information to the moving machine 30 becomes unnecessary, in order to give the opportunity of Leave processing with the moving machine 30, a Join/Leave request message which is mentioned later is transmitted to the moving machine 30 used as the client. The processing for transmitting this Join/Leave request message to a client is made as follows.

0031First, the multicast application 11, When making the moving machine 30 used as the client which is performing the distribution contract receive delivery information (for example, disaster information, advertisement information, etc.), Or when stopping the reception, the Join/Leave

demand to the moving machine 30 including the following information is transmitted to the multicast management department 12.

00321) a client address -- an address () for this to specify a client required of the communication procedure (communication procedure out of band) adopted in the transmission control of a Join/Leave request message which the multicast management department 12 performs **MSISDN and (telephone number)** It is an address of SMS, etc.

00332) a multicasting IP address -- this is a multicasting IP address to which the moving machine 30 used as a client should newly make reception declaration (Join) of information, or its reception end declaration (Leave).

00343) Port number

This is a port number in which the moving machine 30 used as a client should newly start a receiving waiting receptacle, or a port number which should end the receiving waiting receptacle.

00354) a Join/Leave identifier -- this is an identifier for identifying any of a Join demand and a Leave demand the Join/Leave request messages concerned are.

00365) a server address -- this is an IP address of the server 10 which becomes the distribution origin of the information by which multicast distribution is carried out.

00376) a user authentication identifier -- this is an identifier for identifying whether a Join/Leave request message is made to be compulsorily accepted with the moving machine 30 used as a client, or the request message is made to be accepted by the selection operation by a user. If this identifier is ON, when the moving machine 30 used as a client receives this Join/Leave request message, it will accept that request message automatically and will perform processing according to that message. If this identifier is OFF, when the moving machine 30 used as a client receives this Join/Leave request message, it will report that to a user and will leave selection (display etc.) of whether to accept a request message to user's operation. And when the selection operation for accepting the request message is made by a user, the moving machine 30 performs processing according to the request message.

00387) a user inquiry message -- this is a message which should notify a user of the information on the purport that information, including disaster information, advertisement information, etc., is distributed. It is also possible to include arbitrary character strings (message) in this message by the alter operation in the server 10.

0039Next, the multicast management department 12 processes according to the procedure shown in drawing 2, for example.

0040In drawing 2, the multicast management department 12 will create a Join/Leave request message based on the information 1-7, if the Join/Leave demand including the above information 1-7 is received from the multicast application 11 (S1) (S2). This Join/Leave request message, It is transmitted according to the communication procedure which the different multicast management department 12 from the communication procedure (communication procedure of IP) of multicast distribution adopts, for example, the communication procedure of SMS (Short Message Service), and becomes the format of a **** message.

0041In addition to the header for control originally used in SMS, the format of the message transmitted according to the communication procedure of this SMS comprises the control information part and message part for Join/Leave request messages, for example, as shown in drawing 3. And in the control information part, it is the 1 above-mentioned client address (for example, telephone number:090-1234-5678).

2) Multicasting IP address (for example, 226.0.0.1)

3) Port number (for example, 40124)

4) Join/Leave identifier (for example, Join)

5) Server address (for example, 192.0.0.1)

6) User authentication identifier (for example, OFF)

**** rare **. The above-mentioned 7 user-authentication inquiry message (for example, "it is urgent earthquake information") is contained in the message part.

0042When the Join/Leave request message used as such a format is created, the multicast management department 12, The transmission control of the Join/Leave request message to the moving machine 30 with which it comes up in a client address (for example, telephone number:090-1234-5678) according to the communication procedure of SMS is performed (S3). And the Join/Leave request message is transmitted towards the moving machine 30 by the

communication control unit 13 according to the transmission control. The Join/Leave request message transmitted from this communication control unit 13 is transmitted according to the communication procedure of SMS in the inside of the mobile communication system 100 concerned, and the moving machine 30 is transmitted to the moving machine 30 concerned from the base transceiver station which performs radio, for example, base transceiver station 20₁.

0043 On the other hand, the moving machine 30 used as a client processes according to the procedure shown in drawing 4.

0044 In drawing 4, the moving machine 30 will refer to the header for control used in the SMS, if the message transmitted in the inside of the mobile communication system 100 according to the communication procedure of SMS as mentioned above is received (S11), It is judged whether it is the Join/Leave request message which mentioned above whether the incoming message was mail usual **addressed to a user** (S12). If the judgment that the incoming message is an addressing message to a user is made, the moving machine 30 will perform the usual SMS reception (e-mail reception) (S13).

0045 When the judgment that it is the Join/Leave request message which the incoming message mentioned above is made, on the other hand, the moving machine 30, Based on the user authentication identifier of the control information part of the Join/Leave request message, it is judged whether the Join/Leave request message is received (S14). It judges that the moving machine 30 receives the Join/Leave request message as the identifier is an ON state. The user authentication inquiry message (for example, "it is urgent earthquake information") contained in the message part on the other hand with the display of the purport that the moving machine 30 received the Join/Leave request message as the identifier is an OFF state is displayed. And the moving machine 30 judges whether operation **which / of the operation for receiving the Join/Leave request message or the operation for not receiving** is made by the user. If the operation for receiving the message by a user is made, it will judge that the moving machine 30 receives the Join/Leave request message.

0046 The moving machine 30 can also set up beforehand the mode for receiving this Join/Leave request message compulsorily. In this case, it is judged whether the Join/Leave request message concerned is received based on the existence of setting out in that mode by the above-mentioned identifier being an OFF state.

0047 If the judgment with receiving a Join/Leave request message as mentioned above is made, it will be judged whether the bearer (communication path) to the moving machine 30 concerned has already established the moving machine 30 **in the transfer network 50** further (S15). And when the bearer to the moving machine 30 concerned has not been established yet, the moving machine 30. When the bearer is already established after performing processing for making the bearer establish (S16) and, according to the Join/Leave request message which received, Join processing or Leave processing is performed directly (S17).

0048 For example, if the Join/Leave identifier of the control information part in a Join/Leave request message is "Join", the moving machine 30 will perform Join processing. Namely, in order to change into the state where the information on addressing to a multicasting IP address (for example, 226.0.0.1) included in the Join/Leave request message is receivable, The port of the port number contained in setting out and its Join/Leave request message of the multicasting IP address is made into an open condition. And the moving machine 30 receives the IP router in the transfer network 50 connected to base transceiver station 20₁ which performs the moving machine 30 concerned and radio, It declares notifying the multicasting IP address according to IGMP, and receiving the information on the addressing to a multicasting IP address (Join).

0049 On the other hand, if the Join/Leave identifier of the control information part in a Join/Leave request message is "Leave", the moving machine 30 will perform Leave processing. Namely, in order to cancel the state where the information on addressing to a multicasting IP address included in the Join/Leave request message is receivable, Setting out of the multicasting IP address used as the address of information which had received distribution until now is canceled, and the port of the port number contained in the Join/Leave request message is made into close status. And it declares that the moving machine 30 ends reception of the information on the addressing to a multicasting IP address according to IGMP to the IP router in the transfer network 50 connected to base transceiver station 20₁ which performs the moving machine 30 concerned and radio (Leave).

0050When the moving machine 30 receives a Join/Leave request message in the processing mentioned above, If operation for a user not to receive the request message is made, it will be judged as what does not receive the request message (when a user does not wish reception of distribute information, or the end of the reception) (S14 reference), and the above-mentioned processing will be ended as it is.

0051According to the multicast information distribution control method in the above mobile communication systems 100. The opportunity of the Join processing or Leave processing which should be made with the moving machine 30 is given in the Join/Leave request message transmitted according to the communication procedure of SMS from the server 10 which becomes the multicast distribution origin of information. Therefore, it becomes possible to make the moving machine 30 which the server 10 which the disaster information by which multicast distribution is carried out, advertisement information, etc. become the distribution origin takes the lead, and serves as a client receive, or to terminate the reception.

0052Although the Join processing or Leave processing made with the moving machine 30 used as a client is made to be started in the above-mentioned example based on the Join/Leave request message from the server 10 which becomes the distribution origin of information, The transmitting origin of the Join/Leave request message is not limited to the server 10 which becomes distribute information origin. For example, it is also possible to transmit the Join/Leave request message according to the communication procedure of SMS as opposed to the moving machine 30 from other communication terminals (a moving machine, a PC terminal, etc.) which can receive the multicast distribution of the same information. In this case, the opportunity of the Join processing or Leave processing in the moving machine 30 used as a client can be given from other communication terminals.

0053Although the above-mentioned example, in addition, explained the multicast distribution of the information over the moving machine 30 which serves as a client from the server 10 in a mobile communication system, Even when clients are fixing machines (PC terminal etc.), processing (application of the multicast information distribution control method concerning this invention) in the procedure mentioned above is possible.

0054In each above-mentioned example, processing by S12, S14, S15 and S16 which are shown in drawing 4, and S17 corresponds to a start control means (operation response start control means). Processing by S1 and S2 which are shown in drawing 2 corresponds to a demand information creating means, and processing by S3 corresponds to a demand transmitting information control means. Processing by S11 shown in drawing 4 corresponds to a demand information acquisition means.

0055

Effect of the InventionAs mentioned above, as explained, according to the invention in this application according to claim 1 to 8, a client performs the above-mentioned predetermined processing based on the demand information transmitted from communication apparatus other than a client, and the reception of information by which multicast distribution is carried out, or the end of the reception of it is attained from a server. Therefore, the multicast information distribution control method and system which can give the opportunity of the processing for terminating the processing or its reception for enabling reception by the client of the information by which multicast distribution is carried out from communication apparatus other than the client are realizable.

0056According to the invention in this application according to claim 9 or 10, it becomes possible to realize the server which becomes the distribution origin of the information which processes in accordance with the above multicast information distribution control methods.

0057According to the invention in this application according to claim 11 to 13, it becomes possible to realize the client used as the distribution destination of the information which processes in accordance with the above multicast information distribution control methods.

Field of the InventionThis invention relates to the multicast information distribution control method and a system, and it relates to the multicast information distribution control method and system for terminating reception by the client of the information in order to enable in detail reception by the client of the information by which multicast distribution is carried out.

0002This invention relates to the client used as the distribution destination of the server which becomes the distribution origin of the information which processes in accordance with such a multicast information distribution control method, and its information.

Description of the Prior ArtConventionally, in a multicasting type information distribution system, processing for enabling reception by the client of the information by which multicast distribution is carried out, and processing for ending reception of the information are made like next, and are made.

0004The client which wishes to receive distribute information, It changes into the state where the information on addressing to a multicasting IP address corresponding to a multicast group (packet) is receivable (the receiving operation of the data addressed to a multicasting IP address is started, and the port of the port number corresponding to a multicasting IP address is made into an open condition). And the client, According to IGMP (Internet Group Management Protocol), the multicasting IP address is notified to the router in the IP network to which it was connected. It declares receiving the information on the addressing to a multicasting IP address (packet) (Join). By declaration (Join) of receiving the information on this addressing to a multicasting IP address, the information on that addressing to a multicasting IP address to which each router in an IP network is transmitted can reach a client now.

0005When terminating reception by the client of the information on the addressing to a multicasting IP address, on the other hand, a client, The state where the information on the addressing to a multicasting IP address is receivable is canceled (the receiving operation of the data addressed to a multicasting IP address is ended, and the port of the port number corresponding to a multicasting IP address is made into close status). And the client declares ending reception of the information on the addressing to a multicasting IP address according to IGMP to the router in the IP network to which it is connected (Leave). The information on that addressing to a multicasting IP address to which each router in an IP network is transmitted stops reaching a client by declaration (Leave) of ending reception of the information on this addressing to a multicasting IP address.

Effect of the InventionAs mentioned above, as explained, according to the invention in this application according to claim 1 to 8, a client performs the above-mentioned predetermined processing based on the demand information transmitted from communication apparatus other than a client, and the reception of information by which multicast distribution is carried out, or the end of the reception of it is attained from a server. Therefore, the multicast information distribution control method and system which can give the opportunity of the processing for terminating the processing or its reception for enabling reception by the client of the information by which multicast distribution is carried out from communication apparatus other than the client are realizable.

0056According to the invention in this application according to claim 9 or 10, it becomes possible to realize the server which becomes the distribution origin of the information which processes in accordance with the above multicast information distribution control methods.

0057According to the invention in this application according to claim 11 to 13, it becomes possible to realize the client used as the distribution destination of the information which processes in accordance with the above multicast information distribution control methods.

Problem(s) to be Solved by the InventionThe processing for enabling reception by the client of the information by which multicast distribution is carried out in the above multicasting type information distribution systems, Or the opportunity of the processing for terminating reception by the client of the information is given within the client concerned which becomes the side which always receives the multicast distribution of information. However, it may not be appropriate to give the opportunity of processing for the end of reception of the information by a client, including

urgent information, propagandistic information, information useful within a certain group, etc., or its reception within the client depending on the kind of information which should be carried out multicast distribution.

0007For example, disaster information is information which should be immediately distributed to the client irrespective of whether a client is in the state which can receive information. In this case, as for the opportunity of the processing for enabling reception by the client of that disaster information, being given from the distribution origin of that information is preferred.

0008Advertisement information about the service (what is called a limited special offer) to which the period (time) was restricted, It enables it to receive a client within the period, and it is useful also for an advertiser and the user of a client to terminate reception by the client of the information, if the period expires. In this case, as for the opportunity of the processing for terminating the processing and its reception for enabling reception by the client of that information, giving in the distribution origin of that information is preferred.

0009When a one user notices about useful information within the group to whom two or more users belong, it is convenient for each user in a group that other users' communication terminal (client) also enables it to receive the information. In this case, as for the opportunity of the processing for enabling reception with the communication terminal (client) of a user with that information, giving from other users' communication terminal is preferred.

0010Then, the first SUBJECT of this invention, It is providing the multicast information distribution control method and system which can give the opportunity of the processing for terminating the processing or its reception for enabling reception by the client of the information by which multicast distribution is carried out from communication apparatus other than the client.

0011The second SUBJECT of this invention is providing the server which becomes the distribution origin of the information which performs processing according to such a multicast information distribution control method.

0012The third SUBJECT of this invention is providing the client used as the distribution destination of the information which performs processing according to such a multicast information distribution control method.

Means for Solving the ProblemIn order to solve the first SUBJECT of the above, this invention so that it may be indicated to claim 1, In a distribute information control method for a client which performs predetermined processing and performs reception of information by which multicast distribution is carried out via a predetermined communication network from a server, or closing of the reception, From communication apparatus other than the above-mentioned client, are except a communication procedure concerning multicast distribution of the above-mentioned information, and demand information is transmitted to the above-mentioned client according to a communication procedure possible in the above-mentioned predetermined communication network, It is constituted so that the above-mentioned predetermined processing may be performed based on the above-mentioned demand information received in the above-mentioned client and the above-mentioned client can perform reception of information by which multicast distribution is carried out from the above-mentioned server, or closing of the reception.

0014In such a multicast information distribution control method, reception of information by which multicast distribution is carried out from the above-mentioned predetermined processing deed and a server based on demand information transmitted from communication apparatus other than a client, or an end of the reception of a client is attained.

0015The above-mentioned predetermined communication network will not be limited in particular, if information transfer according to multicast distribution of information and communication procedures other than a communication procedure concerning the multicast distribution is possible.

0016The above-mentioned predetermined processing is processing for enabling reception of information by which multicast distribution is carried out, or an end of the reception, In for example, the case of multicast distribution of information according to a communication procedure of IP. Processings, such as declaration (Join) of notifying a multicasting IP address to an IP router, and distributing information on the addressing to a multicasting IP address and declaration (Leave)

of ending reception of information on the addressing to a multicasting IP address, are included.

0017From a viewpoint that an opportunity of the above-mentioned predetermined processing in a client can be given from a server which becomes distribution origin of information by which multicast distribution is carried out, this invention, In an above-mentioned distribute information control method, it can constitute so that the above-mentioned requirement signal may be transmitted to the above-mentioned client from a server which becomes distribution origin of information, so that it may be indicated to claim 2.

0018A viewpoint of applying when performing multicast distribution of information to a moving machine used as a client to this invention, In each above-mentioned multicast distribution control method, the above-mentioned predetermined communication network, It is a network concerning a mobile communication system, It can constitute so that the above-mentioned demand information may be transmitted to a moving machine used as the above-mentioned client according to a communication procedure of a short message service (SMS:Short Message Service) which the mobile communication system provides from the above-mentioned communication apparatus.

0019From a viewpoint that it can opt for reception of information by which multicast distribution is carried out, or an end of the reception with an intention of a user of a client, this invention, When predetermined operation is made in a multicast distribution control method of ***** in a client which received the above-mentioned demand information so that it may be indicated to claim 4, it can constitute so that the above-mentioned predetermined processing based on the demand information may be started.

0020In such a multicast distribution control method, if a user of a client performs the above-mentioned predetermined operation, the above-mentioned predetermined processing based on the demand information will be started. That is, the predetermined operation can determine reception by a client of information by which multicast distribution is carried out, or an end of the reception.

0021In order to solve the first SUBJECT of the above, this invention so that it may be indicated to claim 5, In a multicast information distribution control system for a client which performs predetermined processing and performs reception of information by which multicast distribution is carried out via a predetermined communication network from a server, or closing of the reception, Have a communication apparatus which is except a communication procedure concerning multicast distribution of the above-mentioned information, and transmits demand information to the above-mentioned client according to a communication procedure possible in the above-mentioned predetermined communication network, and. The above-mentioned client has a processing controlling means to which the above-mentioned predetermined processing is made to carry out based on the above-mentioned demand information received in the client concerned, and it is constituted so that this client can perform reception of information by which multicast distribution is carried out from the above-mentioned server, or closing of the reception by processing predetermined **this** .

0022In order to solve the second SUBJECT of the above, this invention, In the server concerned in a multicast information distribution control system for a client which performs predetermined processing and performs reception of information by which multicast distribution is carried out via a predetermined communication network from a server, or closing of the reception so that it may be indicated to claim 9, A demand information creating means which generates demand information including information required to enable processing predetermined **in a client / above-mentioned** , It has a demand transmitting information control means which is except a communication procedure which starts multicast distribution of the above-mentioned information in the above-mentioned demand information generated in this demand information creating means, and transmits demand information to the above-mentioned client according to a communication procedure possible in the above-mentioned predetermined communication network, It is constituted so that a client which received the above-mentioned demand information may perform the above-mentioned predetermined processing based on this demand information and reception of information by which multicast distribution is carried out, or closing of the reception can be performed.

0023In order to solve the third SUBJECT of the above, this invention, In a client reception of information by which performs predetermined processing and multicast distribution is carried out via a predetermined communication network from a server, or whose end of the reception is attained so that it may be indicated to claim 11, A demand information acquisition means which

acquires demand information which is except a communication procedure concerning multicast distribution of the above-mentioned information, and is transmitted according to a communication procedure possible in the above-mentioned predetermined communication network from communication apparatus other than this client, It has a processing controlling means to which the above-mentioned predetermined processing is made to carry out based on the above-mentioned demand information acquired in this demand information acquisition means, and it is constituted so that reception of information multicast distribution is carried out from the above-mentioned server by processing predetermined **this** of, or closing of the reception can be performed.

0024

Embodiment of the Invention Hereafter, an embodiment of the invention is described using a drawing.

0025 The system by which the multicast information distribution control method and system concerning one gestalt of operation of this invention are applied is constituted, for example, as shown in drawing 1. In this example, the multicast distribution of information is made in a mobile communication system to the moving machines (PC terminal connected to a portable telephone, a Personal Digital Assistant (PDA), a portable telephone, etc.) which serve as a client from the server which becomes the distribution origin of information.

0026 In drawing 1, the mobile communication system 100 has the transfer network 50 and two or more base transceiver station $20_1, 20_2, 20_3, \dots, 20_n$. And the server 10 which becomes the distribution origin of information is connected to the transfer network 50. The transfer network 50 has two or more IP routers mutually connected with the channel. The IP router which has a radio control facility is contained in two or more of the IP routers, and either the above-mentioned base transceiver station $20_1 - 20_n$ are connected to each IP router which has the radio control facility.

Each IP router in the transfer network 50 is transmitted to the information on addressing to moving machine 30 sent out from the server 10 (packet) one by one according to predetermined routing procedures (a multicasting routing procedure, a unicast routing procedure, etc.). And the information which reached the IP router which has a radio control facility is transmitted to the moving machine 30 from base transceiver station 20_i (i is 1, \dots , or n) connected to the IP router.

0027 The above-mentioned server 10 has the multicast application 11, the multicast management department 12, the communication control unit 12, and the memory storage 14. The multicast application 11 processes in order to perform multicast distribution of the information stored in the memory storage 14 to the moving machine 30 used as a client. According to the demand from the multicast application 11, the multicast management department 12, The control for enabling reception with the moving machine 30 of the information by which multicast distribution is carried out (Join), Or creation of the Join/Leave request message for giving the opportunity of the control (Leave) for terminating the reception and the transmission control to the moving machine 30 of the message are performed. This transmission control is made according to the communication procedure which can be provided with mobile communication systems 100 other than the communication procedure of IP used when performing multicast distribution of information (packet). For example, SMS (Short Message Service), The transmission control can be performed according to the communications protocol for control with which the mobile communication system 100 concerned which can be included in the control information needed when the moving machine 30 establishes a bearer (communication path) in the mobile communication system 100, and can be provided was equipped. In the state where the bearer (communication path) is already established, the transmission control of the Join/Leave request message can also be performed to the moving machine 30 according to a unicast routing procedure.

0028 The communication control unit 13 performs communications control within the mobile communication system 100 of the server 10. Specifically, control for sending out the information addressed to a multicasting IP address (packet) to the transfer network 50 based on the directions from the multicast application 11 is performed. According to the transmission control by the multicast management department 12 mentioned above, the communication control unit 13 addresses a Join/Leave request message to the moving machine 30, and transmits. This communication control unit 13 communicates with the contents server in the Internet, or an advertisement information server via Gateway 150, and acquires the information which should be distributed. And the information which should be distributed is stored in the memory storage 14 by

the multicast application 11.

0029In the mobile communication system 100 of the above composition, the moving machine 30 used as a client, In order to receive the information by which multicast distribution is carried out from the server 10, it is necessary to perform processing (henceforth Join processing) for enabling the reception of information by which multicast distribution is carried out like the conventional system. The moving machine 30 needs to perform processing (henceforth Leave processing) for terminating reception of the information like the conventional system, in order to end the reception of information which has received such.

0030The server 10 which performs multicast distribution of information, When distributing the information to the moving machine 30 used as a certain client, in order to give the opportunity of the above-mentioned Join processing with the moving machine 30, Or when the distribution of the information to the moving machine 30 becomes unnecessary, in order to give the opportunity of Leave processing with the moving machine 30, a Join/Leave request message which is mentioned later is transmitted to the moving machine 30 used as the client. The processing for transmitting this Join/Leave request message to a client is made as follows.

0031First, the multicast application 11, When making the moving machine 30 used as the client which is performing the distribution contract receive delivery information (for example, disaster information, advertisement information, etc.), Or when stopping the reception, the Join/Leave demand to the moving machine 30 including the following information is transmitted to the multicast management department 12.

00321) a client address -- an address () for this to specify a client required of the communication procedure (communication procedure out of band) adopted in the transmission control of a Join/Leave request message which the multicast management department 12 performs **MSISDN and (telephone number)** It is an address of SMS, etc.

00332) a multicasting IP address -- this is a multicasting IP address to which the moving machine 30 used as a client should newly make reception declaration (Join) of information, or its reception end declaration (Leave).

00343) Port number

This is a port number in which the moving machine 30 used as a client should newly start a receiving waiting receptacle, or a port number which should end the receiving waiting receptacle.

00354) a Join/Leave identifier -- this is an identifier for identifying any of a Join demand and a Leave demand the Join/Leave request messages concerned are.

00365) a server address -- this is an IP address of the server 10 which becomes the distribution origin of the information by which multicast distribution is carried out.

00376) a user authentication identifier -- this is an identifier for identifying whether a Join/Leave request message is made to be compulsorily accepted with the moving machine 30 used as a client, or the request message is made to be accepted by the selection operation by a user. If this identifier is ON, when the moving machine 30 used as a client receives this Join/Leave request message, it will accept that request message automatically and will perform processing according to that message. If this identifier is OFF, when the moving machine 30 used as a client receives this Join/Leave request message, it will report that to a user and will leave selection (display etc.) of whether to accept a request message to user's operation. And when the selection operation for accepting the request message is made by a user, the moving machine 30 performs processing according to the request message.

00387) a user inquiry message -- this is a message which should notify a user of the information on the purport that information, including disaster information, advertisement information, etc., is distributed. It is also possible to include arbitrary character strings (message) in this message by the alter operation in the server 10.

0039Next, the multicast management department 12 processes according to the procedure shown in drawing 2, for example.

0040In drawing 2, the multicast management department 12 will create a Join/Leave request message based on the information 1-7, if the Join/Leave demand including the above information 1-7 is received from the multicast application 11 (S1) (S2). This Join/Leave request message, It is transmitted according to the communication procedure which the different multicast management department 12 from the communication procedure (communication procedure of IP) of multicast distribution adopts, for example, the communication procedure of SMS (Short Message Service),

and becomes the format of a **** message.

0041In addition to the header for control originally used in SMS, the format of the message transmitted according to the communication procedure of this SMS comprises the control information part and message part for Join/Leave request messages, for example, as shown in drawing 3. And in the control information part, it is the 1 above-mentioned client address (for example, telephone number:090-1234-5678).

2) Multicasting IP address (for example, 226.0.0.1)

3) Port number (for example, 40124)

4) Join/Leave identifier (for example, Join)

5) Server address (for example, 192.0.0.1)

6) User authentication identifier (for example, OFF)

**** rare **. The above-mentioned 7 user-authentication inquiry message (for example, "it is urgent earthquake information") is contained in the message part.

0042When the Join/Leave request message used as such a format is created, the multicast management department 12, The transmission control of the Join/Leave request message to the moving machine 30 with which it comes up in a client address (for example, telephone number:090-1234-5678) according to the communication procedure of SMS is performed (S3). And the Join/Leave request message is transmitted towards the moving machine 30 by the communication control unit 13 according to the transmission control. The Join/Leave request message transmitted from this communication control unit 13 is transmitted according to the communication procedure of SMS in the inside of the mobile communication system 100 concerned, and the moving machine 30 is transmitted to the moving machine 30 concerned from the base transceiver station which performs radio, for example, base transceiver station 20₁.

0043On the other hand, the moving machine 30 used as a client processes according to the procedure shown in drawing 4.

0044In drawing 4, the moving machine 30 will refer to the header for control used in the SMS, if the message transmitted in the inside of the mobile communication system 100 according to the communication procedure of SMS as mentioned above is received (S11), It is judged whether it is the Join/Leave request message which mentioned above whether the incoming message was mail usual **addressed to a user** (S12). If the judgment that the incoming message is an addressing message to a user is made, the moving machine 30 will perform the usual SMS reception (e-mail reception) (S13).

0045When the judgment that it is the Join/Leave request message which the incoming message mentioned above is made, on the other hand, the moving machine 30, Based on the user authentication identifier of the control information part of the Join/Leave request message, it is judged whether the Join/Leave request message is received (S14). It judges that the moving machine 30 receives the Join/Leave request message as the identifier is an ON state. The user authentication inquiry message (for example, "it is urgent earthquake information") contained in the message part on the other hand with the display of the purport that the moving machine 30 received the Join/Leave request message as the identifier is an OFF state is displayed. And the moving machine 30 judges whether operation **which / of the operation for receiving the Join/Leave request message or the operation for not receiving** is made by the user. If the operation for receiving the message by a user is made, it will judge that the moving machine 30 receives the Join/Leave request message.

0046The moving machine 30 can also set up beforehand the mode for receiving this Join/Leave request message compulsorily. In this case, it is judged whether the Join/Leave request message concerned is received based on the existence of setting out in that mode by the above-mentioned identifier being an OFF state.

0047If the judgment with receiving a Join/Leave request message as mentioned above is made, it will be judged whether the bearer (communication path) to the moving machine 30 concerned has already established the moving machine 30 **in the transfer network 50** further (S15). And when the bearer to the moving machine 30 concerned has not been established yet, the moving machine 30. When the bearer is already established after performing processing for making the bearer establish (S16) and, according to the Join/Leave request message which received, Join processing or Leave processing is performed directly (S17).

0048For example, if the Join/Leave identifier of the control information part in a Join/Leave request message is "Join", the moving machine 30 will perform Join processing. Namely, in order to change into the state where the information on addressing to a multicasting IP address (for example, 226.0.0.1) included in the Join/Leave request message is receivable, The port of the port number contained in setting out and its Join/Leave request message of the multicasting IP address is made into an open condition. And the moving machine 30 receives the IP router in the transfer network 50 connected to base transceiver station 20₁ which performs the moving machine 30 concerned and radio, It declares notifying the multicasting IP address according to IGMP, and receiving the information on the addressing to a multicasting IP address (Join).

0049On the other hand, if the Join/Leave identifier of the control information part in a Join/Leave request message is "Leave", the moving machine 30 will perform Leave processing. Namely, in order to cancel the state where the information on addressing to a multicasting IP address included in the Join/Leave request message is receivable, Setting out of the multicasting IP address used as the address of information which had received distribution until now is canceled, and the port of the port number contained in the Join/Leave request message is made into close status. And it declares that the moving machine 30 ends reception of the information on the addressing to a multicasting IP address according to IGMP to the IP router in the transfer network 50 connected to base transceiver station 20₁ which performs the moving machine 30 concerned and radio (Leave).

0050When the moving machine 30 receives a Join/Leave request message in the processing mentioned above, If operation for a user not to receive the request message is made, it will be judged as what does not receive the request message (when a user does not wish reception of distribute information, or the end of the reception) (S14 reference), and the above-mentioned processing will be ended as it is.

0051According to the multicast information distribution control method in the above mobile communication systems 100. The opportunity of the Join processing or Leave processing which should be made with the moving machine 30 is given in the Join/Leave request message transmitted according to the communication procedure of SMS from the server 10 which becomes the multicast distribution origin of information. Therefore, it becomes possible to make the moving machine 30 which the server 10 which the disaster information by which multicast distribution is carried out, advertisement information, etc. become the distribution origin takes the lead, and serves as a client receive, or to terminate the reception.

0052Although the Join processing or Leave processing made with the moving machine 30 used as a client is made to be started in the above-mentioned example based on the Join/Leave request message from the server 10 which becomes the distribution origin of information, The transmitting origin of the Join/Leave request message is not limited to the server 10 which becomes distribute information origin. For example, it is also possible to transmit the Join/Leave request message according to the communication procedure of SMS as opposed to the moving machine 30 from other communication terminals (a moving machine, a PC terminal, etc.) which can receive the multicast distribution of the same information. In this case, the opportunity of the Join processing or Leave processing in the moving machine 30 used as a client can be given from other communication terminals.

0053Although the above-mentioned example, in addition, explained the multicast distribution of the information over the moving machine 30 which serves as a client from the server 10 in a mobile communication system, Even when clients are fixing machines (PC terminal etc.), processing (application of the multicast information distribution control method concerning this invention) in the procedure mentioned above is possible.

0054Processing by S12, S14, S15 and S16 which are shown in drawing 4 in each above-mentioned example, and S17 is a start control means.

Brief Description of the Drawings

Drawing 1It is a figure showing the example of composition of the mobile communication system with which the multicast information distribution control method concerning one gestalt of operation of this invention is applied.

Drawing 2It is a flow chart which shows an example of the transmission procedure of a Join/Leave

request message.

Drawing 3 It is a figure showing an example of a format of a Join/Leave request message.

Drawing 4 It is a flow chart which shows an example of processing by the client which received the Join/Leave request message.

Description of Notations

10 Server

20₁, 20₂, ..., 20_n base transceiver station

30 Moving machine (client)

50 Transfer network

100 Mobile communication system

150 Gateway

Drawing 1

For drawings please refer to the original document.

Drawing 2

For drawings please refer to the original document.

Drawing 3

For drawings please refer to the original document.

Drawing 4

For drawings please refer to the original document.

For drawings please refer to the original document.
